

Marston Middle School
www.sandiegounified.org/schools/marston

Gateway To Tech

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Mission Statement

The mission of Marston Middle School is to educate all students in an integrated setting to become responsible, literate, thinking, and contributing members of a technological society. Because we believe that all students can learn, we work cooperatively to instill confidence and self-esteem in every student. By creating a safe learning environment with an instructional curriculum enhanced by interactive technology and a partnership with parents, each student is valued and respected and has opportunities to succeed academically, socially, and personally.

Course Description

Students trace the history, development, and influence of automation and robotics as they learn about mechanical systems, energy transfer, machine automation, and computer control systems. Students use the VEX Robotics platform to design, build, and program real-world objects such as traffic lights, toll booths, and robotic arms.

Technology Goals

The integrated 21st Century (i21) Interactive Classroom is an engaging and personalized learning environment designed to optimize teaching and learning through the interconnected use of mobile computing, audio, visual and formative assessment technologies across the curriculum.

Curriculum:



Automation and Robotics

Materials:

Agenda, pencil & eraser,
colored pencils, PLTW
Engineering Notebook



Parent support in encouraging appropriate behavior and work ethic is greatly appreciated.

Homework Goals

All assignments **not completed** "in class" become homework. The time needed will vary from day to day depending on the nature of the assignment and the ability of the individual student.

Academic Grading Policy

Grading will be based on demonstration of mastery. Students will attempt standards-aligned activities (projects, notebooks, quizzes, essays, presentations, etc.). Student output will be assessed and the appropriate mastery level that was demonstrated will be assigned. Periodic checks and grading of assignments will take place to check for understanding and to ensure the completion of assignments. Benchmark assessments will be administered at the end of each unit.

Behavioral Expectations

1. Be safe
2. Be Respectful
3. Be Responsible
4. Work Together

Citizenship Grading Policy

Citizenship is a reflection of the general behavior, attitude, values, and habits of an individual student in the school community. They measure personal qualities, not academic performance, and will not be equated with the academic grade. All students will begin with a "meets" and will either move up or down based on their overall contribution to the class & school community.



- E - Exceeds**
- M - Meets**
- I - Inconsistent**
- U - Unsatisfactory**



Student Goal: Ride the Bike Independently

	4	Exceeding the Standard The student can not only ride the bike independently, but also perform stunts!	A = 90%
	3	Meeting the Standard The student is successful at riding the bike independently.	B = 75%
	2	Progressing Toward the Standard The student is pedaling well and staying upright, as long as someone is assisting.	C = 50%
	1	Not Meeting the Standard The student is riding a bike, but only with the use of training wheels	D = 25%

Attendance

Students must be "in class" to gain the most from their education. Daily attendance will be taken during class.

It is the student's responsibility to determine missed work due to an absence, by checking Canvas or with a peer from class. Students have until the end of the current grading period to make up work.

General Expectations



Cheating

Think and act for yourself! Copying or letting someone else copy is not acceptable. Instead, ask for help!



Assignments & Homework

Copy **BOTH** the assignment & homework DAILY in your student agenda. Being organized and prepared can lead to good grades and a successful school year.

Late Work

Late work will be accepted but **MUST** be complete and within the current grading period. Late work may be subject to higher grading standards and/or attendance at mandatory office hours.

Absent or Need Extra Help?

Check out **Canvas** (sandiegounified.instructure.com) for the daily update and posted assignments. Request makeup work if needed. Ask questions during class or through email.



Tutoring is available during office hours after school (by appointment). I need to know that you are coming.



Unit 1: What Is Automation and Robotics?

The field of automation and robotics includes computer-controlled machines used to make manufacturing more efficient, productive, and safe. Robots are also used as assistive tools for people with disabilities and as equipment in hospitals to help with surgery, to deliver food, or to dispense medications. Robots are becoming popular household helpers, performing chores like vacuuming and mowing lawns. Scientists say that future generation robots will be able to clean up, take out the trash, or even care for an elderly parent. In this unit students will learn how automation and robotics affect everyday life both positively and negatively, including safety, comfort, choices, and attitudes about a technology's development and use.

Unit 2: Mechanical Systems

Think about a bicycle, an eggbeater, a sewing machine, a hand-cranked drill, and a workshop vice. What do they have in common? All of them have at least one mechanism that provides movement. If the devices were taken apart, you would find a series of gears that redirect the applied force so they can accomplish their tasks. The activities in this lesson will introduce the students to several mechanisms that are used to change speed, torque, force, type of movement, and direction of movement. These mechanisms have been developed over time to address the need for changes in machine tools, robots, automobiles, airplanes, etc.

Unit 3: Automated Systems

Computer programs and sensing devices provide feedback to guide tools and machines in the manufacturing of parts. Automated systems can be used to pick up a part, move it to a certain location, wait for a process to be performed, pick it back up, and deliver it to an offloading location. Upon completion of this lesson, students will have a better understanding of the necessary components of a flexible manufacturing system and the programming necessary for communication between the sensors, motors and building components.

